

Amendments to the Claims

The following listing of the claims replaces all previous amendments and listings of the claims.

1.-3. (Canceled)

4. (Currently Amended) A gas injection type soldering apparatus, ~~characterized by~~ comprising:

a gas injection mechanism ~~for injecting~~ configured to inject a mixed gas in which a reducing gas is mixed with an inert gas from an injection port to a subject; and

a soldering iron ~~for performing~~ configured to perform soldering by heating and melting solder, the soldering iron including the injection port,

wherein the gas injection mechanism comprises flow regulators ~~for~~ configured to individually ~~regulating the~~ regulate flow rates of the reducing gas and the inert gas supplied from gas supply sources separately, a gas mixer ~~for uniformly mixing~~ configured to uniformly mix the reducing gas and the inert gas supplied from the flow regulators, a gas heater ~~for heating a~~ configured to heat the mixed gas supplied from the gas mixer ~~so as to~~ dehumidify and dry it the mixed gas and to increase ~~the a~~ temperature of the mixed gas, the injection port ~~for injecting~~ configured to inject the heated hot mixed gas, and a controller ~~capable of regulating the~~ configured to regulate a mixing ratio of the reducing gas and the inert gas by controlling the respective flow regulators.

5. (Currently Amended) A soldering apparatus according to claim 4, ~~characterized in that~~ wherein the gas injection mechanism further comprises a concentration sensor ~~for measuring the~~ configured to measure a concentration of the gas in ~~the a~~ vicinity of the subject and a safety circuit ~~for restricting the~~ configured to restrict a supply of at least the reducing gas, when ~~the a~~ value of concentration measured by the concentration sensor exceeds a set value, by controlling the flow regulators by the controller.

6. (Currently Amended) A soldering apparatus according to claim 4, ~~characterized in that~~ wherein the reducing gas is a hydrogen gas and the inert gas is a nitrogen gas.

7. (Currently Amended) A soldering apparatus according to claim 4, ~~comprises further~~ comprising:

a guide ~~for feeding~~ configured to feed thread solder to the soldering iron, and the solder guide ~~also acts as means for injecting~~ configured to inject the hot mixed gas.

8. (Currently Amended) A soldering apparatus according to claim 4, ~~characterized in that~~ wherein the soldering iron is a contact type soldering iron ~~and comprises~~ comprising a soldering iron main body in which a soldering iron heater is contained, a soldering iron tip ~~for heating~~ configured to heat and ~~melting~~ melt solder, the injection port opened so as to surround the an entire periphery of the soldering iron tip, and a gas flow path communicating with the injection port.

9. (Currently Amended) A soldering apparatus according to claim 8, ~~characterized in that~~ wherein the temperature of the mixed gas is set to a temperature lower than ~~that a~~ a temperature of the soldering iron tip when soldering is performed.

10. (Currently Amended) A soldering apparatus according to claim 4, ~~characterized in that~~ wherein the soldering iron is a non-contact type soldering iron and has the injection port at the an extreme end of the soldering iron, and soldering is performed by heating and melting solder by the heat of the mixed gas itself injected from the injection port in the an atmosphere of the mixed gas.

11. (Currently Amended) A soldering apparatus according to claim 4, ~~characterized in that~~ wherein the soldering iron is a laser type soldering iron ~~and comprises~~ comprising a soldering iron main body ~~for projecting~~ configured to project a laser beam and the injection port ~~also acting as the~~ comprising a projection port of the laser beam, and ~~that~~ wherein soldering is performed by projecting the laser beam to a the subject in the a jet stream of the

mixed gas injected from the projection port.

12. (Currently Amended) A gas injection type soldering apparatus, ~~characterized by~~ comprising:

a gas injection mechanism ~~for injecting~~ configured to inject a mixed gas in which a hydrogen gas is mixed with a nitrogen gas from an injection port to a subject; and

a soldering iron ~~for performing~~ configured to perform soldering by heating and melting solder, the soldering iron including the injection port,

wherein the gas injection mechanism comprises flow regulators ~~for~~ configured to individually ~~regulating the~~ regulate flow rates of the hydrogen gas and the nitrogen gas supplied from gas supply sources separately, a gas mixer ~~for~~ configured to uniformly ~~mixing~~ mix the hydrogen gas and the nitrogen gas supplied from the flow regulators, a gas heater ~~for heating a~~ configured to heat the mixed gas supplied from the gas mixer ~~so as to dehumidify and dry it the mixed gas~~ and to increase ~~the a~~ temperature of the mixed ~~has gas~~, the injection port ~~for injecting~~ configured to inject the heated hot mixed gas, and a controller ~~capable of regulating the~~ configured to regulate a mixing ratio of the hydrogen gas and the nitrogen gas by controlling the respective flow regulators, ~~and further comprising a concentration sensor for measuring the~~ configured to measure a concentration of the gas in ~~the a~~ vicinity of the subject, and a safety circuit ~~for restricting the~~ configured to restrict a supply of at least the hydrogen gas, when ~~the a~~ value of concentration measured by the concentration sensor exceeds a set value, by controlling the flow regulators by the controller.

13. (Currently Amended) A soldering apparatus according to claim 12, ~~characterized by~~ further comprising:

a solder guide ~~for feeding~~ configured to feed thread solder to the soldering iron, ~~and the solder guide also acts as means for injecting~~ configured to inject the hot mixed gas.

14. (Currently Amended) A gas injection type soldering apparatus according to claim

12, ~~characterized in that~~ wherein the soldering iron is a contact type soldering iron ~~and comprises~~ comprising a soldering iron main body in which a soldering iron heater is contained, a soldering iron tip ~~for heating~~ configured to heat and ~~melting~~ melt solder, the injection port opened so as to surround ~~the~~ an entire periphery of the soldering iron tip, and a gas flow path communicating with the injection port, and ~~that~~ wherein the temperature of the mixed gas is set to a temperature lower than ~~that~~ a temperature of the soldering iron tip when soldering is performed.

15. (Currently Amended) A soldering apparatus according to claim 12, ~~characterized in that~~ wherein the soldering iron is a non-contact type soldering iron and has the injection port at ~~the~~ an extreme end of the soldering iron, and soldering is performed by heating and melting solder by ~~the~~ heat of the mixed gas itself injected from the injection port in ~~the~~ an atmosphere of the mixed gas.

16. (Currently Amended) A gas injection type soldering apparatus according to claim 12, ~~characterized in that~~ wherein the soldering iron is a laser type soldering iron ~~and comprises~~ comprising a soldering iron main body ~~for projecting~~ configured to project a laser beam and the injection port ~~also acting as the~~ comprising a projection port of the laser beam, and ~~that~~ wherein soldering is performed by projecting the laser beam to a the subject in ~~the~~ a jet stream of the mixed gas injected from the projection port.